PROCEEDINGS OF THE

ENTOMOLOGICAL SOCIETY OF WASHINGTON

Vol. 73 JUNE 1971 No. 2

TWO NEW SPECIES OF ECHINISCUS FROM THE PACIFIC NORTHWEST (TARDIGRADA: ECHINISCIDAE)

ROBERT O. SCHUSTER *and* ALBERT A. GRIGARICK, *Department of Entomology, University of California, Davis, California 95616*

ABSTRACT—Two new species are described in the tardigrade genus *Echiniscus*. One species, **horningi**, occurs along the north coast of California and in western Oregon. The other, **knowltoni**, appears to be restricted to desert areas of southern Idaho and northern Utah.

In a previous study, Schuster and Grigarick (1965) recorded the presence of *Echiniscus* (*Echiniscus*) *multispinosus* Cunha in five localities in Oregon and California. The absence of spine B^d and the presence of barbs on lateral spines D and E were noted for these specimens but these discrepancies from the described form were attributed to intraspecific variation. Additional material has been collected recently from this general area and these specimens are essentially identical to those collected previously. The characters distinguishing these populations now appear to be constant and sufficient to allow recognition of a species distinct from *multispinosus*.

Echiniscus (Echiniscus) horningi Schuster and Grigarick, n. sp.
(Figs. 1–3)

Holotype (slide): Length excluding legs IV 250 μ, including legs IV 280 μ; width 125 μ; eye spots present. Distribution of dorsal plates as illustrated (fig. 1); cuticle of plates composed of polygons 1 μ to 1.7 μ across, with pores of ca 1 μ diameter unevenly distributed (fig. 1, 8.5 μ square). Head with internal cirrus 28 μ long; external cirrus 34 μ long; papilla 10 μ long, 6 μ wide. Spines present at lateral and dorsolateral positions A, B, C, D, E and at dorsal positions C, D; lateral spines D, E distinctly barbed. Legs I and IV with papillae ca 5 μ long; leg IV with dentate collar of 13 teeth; internal claws of legs I–IV with recurved spur, external claws simple.

Supplementary descriptive information (fig. 2, head, and fig. 3, tail) are photographs of a paratopotype taken with a Stereoscan microscope. The specimen was prepared by fixing in boiling water-formalin, freeze drying, and gold plating. Facets of the terminal plate are apparent on dried specimens but are not evident on slide mounted examples.

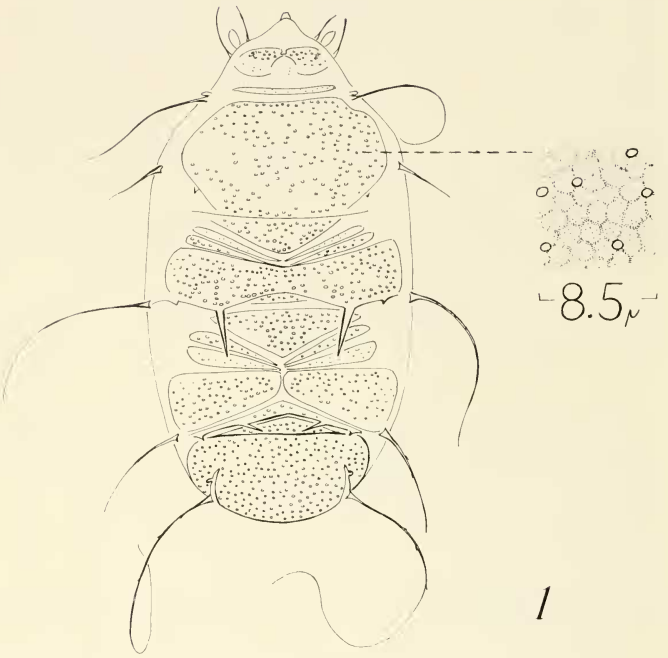
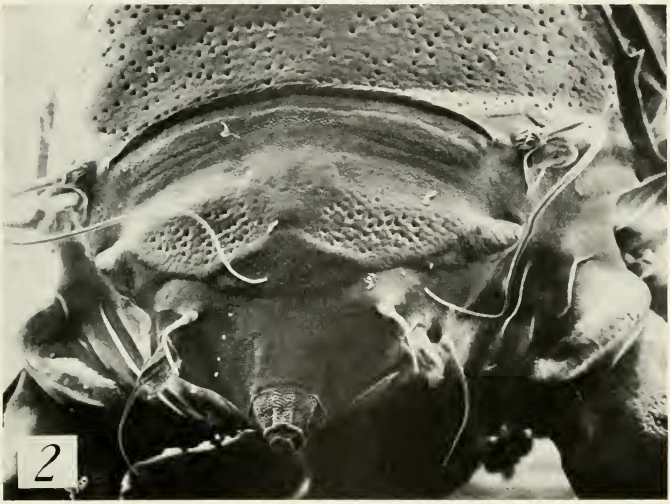
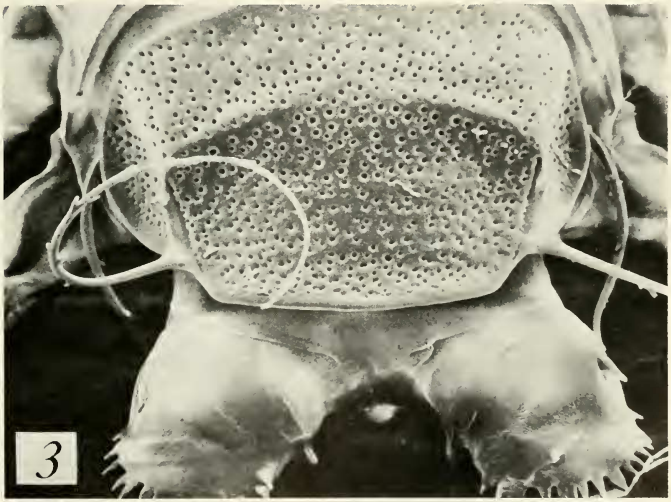


Fig. 1. *Echiniscus horningi* Schuster and Grigarick, n. sp., holotype, dorsal.

The holotype (UCD 401) was collected in Silver Falls State Park, Marion County, Oregon 1-10-1970, by D. S. Horning, Jr. Ten paratypes are designated: 2 specimens collected with the holotype; 4 specimens 1 mi S Newport, Lincoln County, Oregon, X-17-1962, K. Goeden; 1 specimen 3 mi S Florence, Lane County, Oregon, XII-20-1969, C. J. and D. S. Horning; 3 specimens 4 mi SW Camas Valley, Douglas County, Oregon, XII-20-1969, D. S. Horning. Specimens from Marin and San Mateo counties are apparently conspecific but are not included in the type series.

Echiniscus multispinosus is described as having a uniformly pitted cuticle, dorsal spine B, and simple lateral spines D and E. *Echiniscus horningi* has a cuticular sculpture of irregularly spaced pores and uni-





Figs. 2–3. *Echiniscus horningi* Schuster and Grigarick, n. sp.: 2, paratopotype, anterior aspect 1,750×; 3, paratopotype, posterior aspect 2,150×.

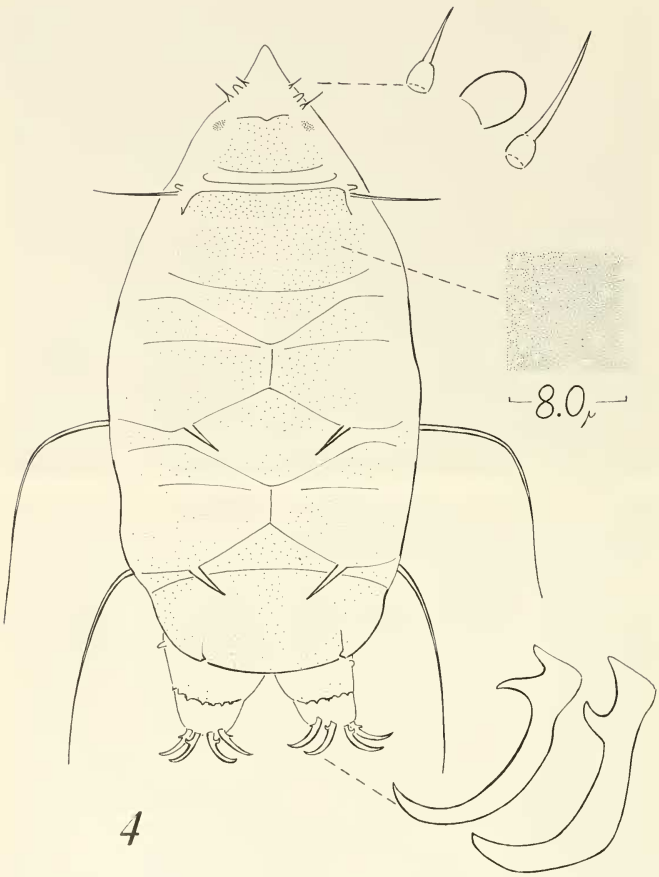


Fig. 4. *Echiniscus knowltoni* Schuster and Grigarick, n. sp., holotype, dorsal.

formly spaced polygons, lacks dorsal spine B, and has barbed lateral spines D and E. The species is named for Dr. Donald S. Horning, Jr. in appreciation of his effort in collecting nearly 200 samples of Tardigrada in Oregon.

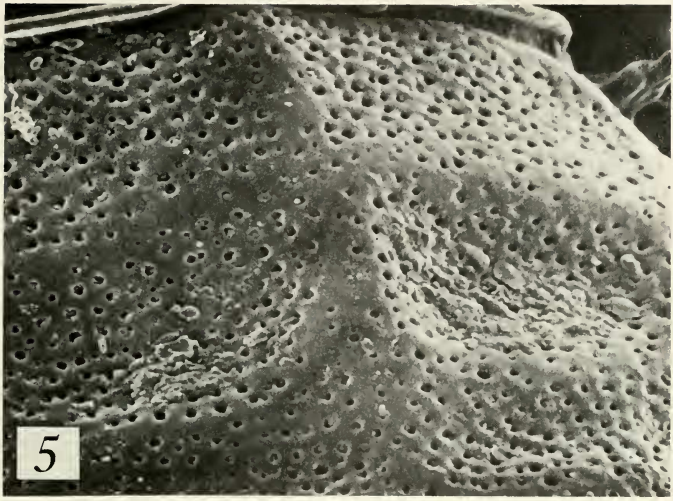


Fig. 5. *Echiniscus knowltoni* Schuster and Grigarick, n. sp., paratype, scapular plate 2,520×.

Echiniscus (Echiniscus) knowltoni Schuster and Grigarick, n. sp.
(Figs. 4, 5)

Holotype (slide): Length excluding legs IV 255 μ, including legs IV 290 μ; width 120 μ; eye spots present. Distribution of dorsal plates as illustrated (fig. 4); cuticle of plates essentially smooth between unevenly spaced pores of less than 1 μ diameter. Head with internal cirrus 9 μ long; external cirrus 17 μ long; papilla 6 μ long, 5 μ wide. Scapular plate with 2 transverse and 3 longitudinal stripes of reduced punctation (fig. 5). End plate with 4 longitudinal stripes, 1 distinct transverse stripe at anterior one-third, 1 obscure stripe at posterior one-third. Anterior areas of plates C, D, anterior area of median plate II, and all of median plate III with uneven texture. Lateral filaments ca 120 μ long, and dorsal spines ca 30 μ long present on plates C, D. Legs I and IV with papilla 4 μ long; leg IV with narrow plate and dentate collar of 9 to 12 indistinctly separated teeth; internal claws of leg IV with large recurved spur, external claw IV with perpendicular spur.

The holotype (UCD 402) is from Black Pine, Oneida County, Idaho, IX-29-1969, collected by G. F. Knowlton. Thirty-eight paratypes are from: Black Pine, Oneida County, Idaho, IX-29-1969, moss under *Juniperus osteosperma* (Torr.) Little; 8 mi NW Kelton, Box Elder County, Utah, XI-8-1969, moss under *J. osteosperma*; Kelton Pass, Box Elder County, Utah; VII-8-1969; moss beneath juniper; 5 mi SW Juni-

per, Oneida County, Idaho, XI-22-1969, moss on *J. osteosperma*; all by G. F. Knowlton.

Echiniscus knowltoni will key to *E. trisetosus* Cuénot in Ramazzotti's monograph (1962). The cuticular sculpture of *trisetosus* is polygonal, similar to *E. blumi* Richters, and therefore completely distinct from the sculpturing of this species. The sculpture of *knowltoni* closely resembles that of *E. quadrispinosus* Richters but the relationship is obscured by the absence of filaments B and E.

Specimens range in length from 190 μ to 300 μ. Most of the individuals fall within two size ranges, 200–210 μ and 235–260 μ.

This species is named for Dr. George F. Knowlton who collected the specimens during a study of invertebrate fauna for the IBP Desert Biome Project, Arthropod Survey.

The holotypes are in the Department of Entomology Museum at Davis, paratypes in the California Academy of Sciences and the Smithsonian Institution.

Acknowledgments

The photographs were taken by us, with the assistance of Marvin G. Kinsey, using the Cambridge Stereoscan in the Facility for Advanced Instrumentation at Davis. Financial assistance was received from the American Philosophical Society, Penrose Fund.

References

Ramazzotti, G. 1962. Il Phylum Tardigrada. Mem. Ist. Ital. Idrobiol. 14:1–595.

Schuster, Robert O. *and* **Albert A. Grigarick.** 1965. Tardigrada from Western North America with emphasis on the fauna of California. Univ. Calif. Publ. Zool. 76:1–67.

A NOTE ON CAMPTOPROSOPELLA EQUATORIALIS SHEWELL (DIPTERA: LAUXANIIDAE)

A series of *Camptoprosopella equatorialis* Shewell (1939, Can. Ent. 71:140) was received for determination from the Instituto Colombiano Agropecuario, with the following data: Bello, Antioquia, Colombia, 11 October 1970 (Guillermo Sánchez G.), host *Manihot utilissima*. Eight specimens were retained for the U. S. National Museum collections.

This species was described from a single damaged male specimen from "Manao," Brazil, in the USNM, and apparently not since recorded. The additional specimens, in better condition, show that the 3rd dorsocentral bristle, close before the second, is one-third the length of the second bristle and that the arista bears only very short hairs below in the basal half and 3 to 4 somewhat longer ones in the apical half.—GEORGE C. STEYSKAL, *Systematic Entomology Laboratory, Agricultural Research Service, U. S. Department of Agriculture, c/o U. S. National Museum, Washington, D. C. 20560.*